SAF-RC-075 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0404 SAF-RC-075

Waste Site: 100-D-50:8

Date:

27 August 2012

Τ̈́o:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Subsite 100-D-50:8

Subject:

Inorganics - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	ample ID Sample Date Media		Validation	Analyte
J1PX15	7/31/12	Soil	С	See note 1
J1PX16	7/31/12	Soil	С	See note 1
J1PX17	7/31/12	Soil	Soil C	
J1PX18	7/31/12	Soil	С	See note 1
J1PX19	7/31/12	Soil	С	See note 1
J1PX20	7/31/12	Soil	С	See note 1
J1PX21	7/31/12	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the zinc result in sample J1PX21 was qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1PX21) was submitted for analysis. Thirteen analytes were detected in the field blank. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all antimony (56%) and silicon (11%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (26%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the zinc result in sample J1PX21 was qualified as undetected and flagged "UJ".
- Due to matrix spike recoveries outside QC limits, all antimony (56%) and silicon (11%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (26%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0404	REVIEWER: ELR	Project: 100-D-50:8	PAGE <u>1</u> OF <u>1</u>
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery
Zinc	UJ	J1PX21	Method blank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX15

Lab Sample ID:

280-31717-1

Client Matrix:

Solid

Client: Washington Closure Hanford

% Moisture:

1.0

Date Sampled: 07/31/2012 1320

Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B Analysis Batch: Prep Batch:

280-131612 280-130761 Instrument ID: Lab File ID:

MT_026 26a080712.asc

Dilution:

1.0

Initial Weight/Volume: Final Weight/Volume:

1.10 g 100 mL

Analysis Date: Prep Date:

08/07/2012 1534 08/06/2012 0745

V8/24/12

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		6230	X	1.4	4.6
Antimony		0.59	\mathcal{I}	0.35	0.55
Arsenic		1.3		0.61	0.92
Barium		62.7	Χ	0.070	0.46
		0.030	U ·	0.030 .	0.18
Beryllium		1.2	В	0.90	. 1.8
Boron		0.13	В	0.038	0.18
Cadmium		7820	X	12.9	45.9
Calcium		7.3	X	0.053	0.18
Chromium		8.5	x	0.092	0.92
Cobalt		18.5	X	0.20	0.92
Copper		22700	X ·	3.5	4.6
Iron		9.6	^	0.25	0.46
Lead		4320	X	3.4	18.4
Magnesium			x	0.092	0.92
Manganese		306	ВM	0.032	1.8
Molybdenum		0.40	X	0.11	3.7
Nickeł		10.0	^	37.6	275
Potassium		903		0.79	0.92
Selenium		0.79	U		9.2
Silicon		506	их Ј	5.2	0.18
Śilver	,	0.15	U .	0.15	
Sodium		345		54.2	110
Vanadium		60.3	X	0.086	1.8
Zinc		44.0	X	0.37	0.92

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A Analysis Batch: Prep Batch:

280-131210 280-130819

Instrument ID: Lab File ID:

Initial Weight/Volume:

Final Weight/Volume:

MT_033 120803aa.txt

0.57 g

50 mL

Dilution: Analysis Date: 1.0

08/03/2012 1859

Prep Date:

08/03/2012 1155

DryWt Corrected: Y

Result (mg/Kg)

Qualifier

MDL 0.0059 RL

0.018

Analyte Mercury

0.030

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX16

Client: Washington Closure Hanford

Lab Sample ID:

280-31717-2

Client Matrix:

Solid

% Moisture:

1.9

Date Sampled: 07/31/2012 1325

Date Received: 08/02/2012 0900

6010B Metals (ICP)

N8/24/12

Analysis Method: Prep Method:

6010B

3050B

Dilution: Analysis Date: Prep Date:

1.0

08/07/2012 1544 08/06/2012 0745 Analysis Batch: Prep Batch:

280-131612 280-130761

Instrument ID: Lab File ID:

MT_026 26a080712.asc

Initial Weight/Volume:

1.08 g

Final Weight/Volume:

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum	and produce the continue of th	6600	X	1.5	4.7
Antimony		0.36	U J	0.36	0.57
Arsenic		1.6		0.62	0.94
Barium		61.4	X	0.072	0.47
		0.10	В	0.031	0.19.
Beryllium		1.3	В	0.92	1.9
Boron		0.13	В	0.039	0.19
Cadmium		6480	X	13.3	47.2
Calcium		9.3	X	0.055	0.19
Chromium		7.5	X	0.094	0.94
Cobalt		17.3	x	0.20	0.94
Copper		19500	X	3.6	4.7
Iron			Λ	0.25	0.47
Lead		4.8 4180	X	3.5	18.9
Magnesium	•		X	0.094	0.94
Manganese		291	В	0.25	1.9
Molybdenum		0.60	X	0.12	3.8
Nickel		10.5	^	38.7	283
Potassium		1120	υ _	0.81	0.94
Selenium		0.81	VT	5.3	9.4
Silicon		501	× 1	0.15	0.19
Silver		0.15	U		113
Sodium		265		55.7	
Vanadium		49.7	X	0.089	1.9
Zinc		39.0	X	0.38	0.94

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A

7471A

Dilution: Analysis Date: Prep Date:

1.0

08/03/2012 1901 08/03/2012 1155 Analysis Batch: Prep Batch:

280-131210 280-130819

Instrument ID: Lab File ID:

MT_033 120803aa.txt

Initial Weight/Volume: Final Weight/Volume: 0.62 g 50 mL

MDL RL Qualifier Result (mg/Kg) DryWt Corrected: Y Analyte 0.017 0.0055 0.012 Mercury

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX17

Client: Washington Closure Hanford

Lab Sample ID:

280-31717-3

Client Matrix:

Solid

% Moisture:

0.9

Date Sampled: 07/31/2012 1335

Date Received: 08/02/2012 0900

6010B Metals (ICP)

Value

Analysis Method: Prep Method:

Dilution:

6010B

3050B

1.0

Analysis Date: Prep Date:

08/07/2012 1547 08/06/2012 0745 Analysis Batch: Prep Batch:

280-131612 280-130761 Instrument ID:

MT_026 Lab File ID:

Initial Weight/Volume:

26a080712.asc

Final Weight/Volume:

1.13 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
The second second second second second		5900	X	1.4	4.5
Numinum		0.34	$\circ \mathcal{J}$	0.34	0.54
Antimony		1.5		0.59	0.89
Arsenic		52.1	Х	0.068	0.45
Barium		0.029	В	0.029	0.18
Beryllium		0.88	Ū	0.88	1.8
Boron		0.11	В	0.037	0.18
Cadmium		7270	X	12.6	44.7
Calcium		8.1	x	0.052	0.18
Chromium			×	0.089	0.89
Cobalt		8.2	×	0.19	0.89
Copper		17.2	×	3.4	4.5
ron		21300	^	0.24	0.45
_ead		3.4	×	3.3	17.9
Magnesium		4390	×	0.089	0.89
vlanganese		286	Û	0.23	1.8
Molybdenum		0.23		0.11	3.6
Nickel		10.5	X	36.6	268
Potassium		837			0.89
Selenium		0.77	U +-	0.77	8.9
Silicon		535	× I	5.1	0.18
Silver		0.14	U	0.14	107
Sodium		286		52.7	
Vanadium		57.5	X	0.084	1.8
Zinc		38.7	X	0.36	0.89

7471A	Mercury	(CVAA)
, 7, 17	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(

280-131210

280-130819

Analysis Method:

7471A

7471A

Dilution: Analysis Date:

Prep Method:

1.0

Prep Date:

08/03/2012 1903

08/03/2012 1155

Result (mg/Kg)

Qualifier

MDL

Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Lab File ID:

MT_033

0.64 g

50 mL

120803aa.txt

Analyte Mercury DryWt Corrected: Y

0.032

Analysis Batch:

Prep Batch:

0.0052

RL 0.016

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX18

Lab Sample ID:

280-31717-4

Client Matrix:

Solid

% Moisture:

Volulie

1.2

Date Sampled: 07/31/2012 1340

Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B

1.0

Client: Washington Closure Hanford

Dilution: Analysis Date: Prep Date:

08/07/2012 1550 08/06/2012 0745 Analysis Batch: Prep Batch:

280-131612 280-130761 Instrument ID:

MT_026 Lab File ID: 26a080712.asc

Initial Weight/Volume:

1.00 g

Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum	The same species and an electronic or the species of the same of t	6400	X	1.6	5.1
Antimony		0.38	u 🍱	0.38	0.61
Arsenic		1.3	_	0.67	1.0
Barium		65.0	Х	0.077	0.51
		0.084	В	0.033	0.20
Beryllium		0.99	U	0.99	2.0
Boron		0.12	В	0.041	0.20
Cadmium		6280	X	14.3	50.6
Calcium		8.2	X	0.059	0.20
Chromium		8.2	X	0.10	1.0
Cobalt		16.8	×	0.22	1.0
Copper		20900	×	3.8	5.1
Iron		4.1	^	0.27	0.51
Lead		4430	X	3.7	20.2
Magnesium		324	x	0.10	1.0
Manganese		0.43	В	0.26	2.0
Molybdenum		12.4	X	0.12	4.0
Nickel			^	41.5	304
Potassium		1020	U	0.87	1.0
Selenium		0.87	×J	5.7	10.1
Silicon		549		0.16	0.20
Silver		0.16	U	59.7	121
Sodium		284	v		2.0
Vanadium		52.6	X	0.095	1.0
Zinc		39.3	X	0.40	1.0

7471A Mercury (CVAA)

280-131210

280-130819

Analysis Method:

7471A

7471A

Prep Method: Dilution:

1.0

Analysis Date:

08/03/2012 1906

Prep Date:

Analyte

Mercury

08/03/2012 1155

DryWt Corrected: Y

Result (mg/Kg) 0.011

Analysis Batch:

Prep Batch:

Qualifier В

MDL 0.0049

instrument ID:

Initial Weight/Volume:

Final Weight/Volume:

Lab File ID:

RL

0.015

MT_033

0.69 g

50 mL

120803aa.txt

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX19

Client: Washington Closure Hanford

Lab Sample ID:

280-31717-5

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 07/31/2012 1355

Date Received: 08/02/2012 0900

6010B Metals (ICP)

8/24/12

Analysis Method: Prep Method:

6010B 3050B

1.0

Dilution: Analysis Date:

Prep Date:

08/07/2012 1552 08/06/2012 0745 Analysis Batch: Prep Batch:

280-131612

280-130761

Instrument ID: Lab File ID:

MT_026 26a080712.asc

Initial Weight/Volume:

1.03 g

Final Weight/Volume:

Instrument ID:

Initial Weight/Volume:

Final Weight/Volume:

Lab File ID:

100 mL

Annhaha	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Analyte	A 4 CHARLES CHARLES CONTROL OF CO	6650	X	1.5	4.9
Aluminum		0.37	в 꿏	0.37	0.59
Antimony		1.7		0.65	0.99
Arsenic		59.5	X	0.075	0.49
Barium		0.11	В	0.033	0.20
Beryllium		0.11	ŭ	0.97	2.0
Boron			В	0.040	0.20
Cadmium		0.13	X	13.9	49.3
Calcium		6930	x	0.057	0.20
Chromium		10.6		0.099	0.99
Cobalt		7.1	X		0.99
Copper		17.4	X	0.21	4.9
Iron		18300	X	3.7	0.49
Lead	•	3.4		0.27	
Magnesium		4200	X	3.7	19.7
Manganese		269	X	0.099	0.99
Molybdenum		0.38	В	0.26	2.0
Nickel		11.1	Χ	0.12	3.9
Potassium		943		40.5	296
		0.85	U	0.85	0.99
Selenium		419	\mathcal{I}_{x} ×	5.6	9.9
Silicon		0.16	U	0.16	0.20
Silver		266		58.2	118
Sodium		47.8	X	0.093	2.0
Vanadium		36.3	X	0.39	0.99
Zinc		30.3	^	4.2 -	•

7471A Mercury (CVAA)

280-131210

280-130819

Analysis Method:

7471A 7471A

Prep Method: 1.0

Analysis Date: Prep Date:

Dilution:

08/03/2012 1908

08/03/2012 1155

Analysis Batch:

Prep Batch:

120803aa.txt 0.66 g

50 mL

MT_033

RL Qualifier MDL Result (mg/Kg) DryWt Corrected: Y Analyte 0.016 0.0051 0.031 Mercury

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX20

Lab Sample ID:

280-31717-6

Client Matrix:

Solid

% Moisture:

0.5

Date Sampled: 07/31/2012 1235

Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method:

6010B 3050B Analysis Batch: Prep Batch:

280-131612 280-130761

Instrument ID: Lab File ID:

MT_026 26a080712.asc

Prep Method: 1.0

Client: Washington Closure Hanford

Analysis Date: Prep Date:

Dilution:

08/07/2012 1514 08/06/2012 0745

Initial Weight/Volume: Final Weight/Volume:

1.08 g 100 mL

M@ /26/12

A b . d	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Analyte	The second section of the section of	7310	X	1.4	4.7
Aluminum		0.35	υJ	0.35	0.56
Antimony		1.5	٠ ٦	0.61	0.93
Arsenic		65.8	X	0.071	0.47
Barium			В	0.031	0.19
Beryllium		0.11	В	0.91	1.9
Boron		1.6	В	0.038	0.19
Cadmium		0.14	X	13.1	46.5
Calcium		5340		0.054	0.19
Chromium		10.1	X	0.093	0.93
Cobalt		7.5	X	0.20	0.93
Соррег		15.9	X		4.7
Iron		20700	X	3.5	0.47
Lead		4.6		0.25	18.6
Magnesium		4220	X	3.4	0.93
Manganese		303	X	0.093	
Molybdenum		0.24	U	0.24	1.9
Nickel		10.6	X	0.11	3.7
Potassium		1340	·	38.2	279
Selenium		0.80	υ	0.80	0.93
		639	χ χ	5.3	9.3
Silicon		0.15	U	0.15	0.19
Silver		279		54.9	112
Sodium		50.6	. X	0.088	1.9
Vanadium		41.2	X	0.37	0.93
Zinc		71.4			

7471A Mercury (CVAA)

280-131210

280-130819

Analysis Method: Prep Method:

7471A

7471A

1.0

Dilution: Analysis Date:

08/03/2012 1910

Prep Date:

08/03/2012 1155

DryWt Corrected: Y

Result (mg/Kg) 0.0079

Analysis Batch:

Prep Batch:

Qualifier В

MDL 0.0048

Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Lab File ID:

RL

0.015

MT_033

0.69 g

50 mL

120803aa.txt

Mercury

Analyte

Job Number: 280-31717-1

Sdg Number: JP0404

Client Sample ID:

J1PX21

Client: Washington Closure Hanford

Lab Sample ID:

280-31717-7

Client Matrix:

Solid

d

% Moisture:

0.0

Date Sampled: 07/31/2012 1350

Date Received: 08/02/2012 0900

6010B Metals (ICP)

Analysis Method: Prep Method: 6010B 3050B

1.0

Analysis Batch: Prep Batch: 280-131612 280-130761 Instrument ID: Lab File ID: MT_026 26a080712.asc

Dilution:

Analysis Date:
Prep Date:

08/07/2012 1517 08/06/2012 0745 1/21/12

Initial Weight/Volume: Final Weight/Volume:

1.08 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum	Company transferred to the control of the control o	216	X	1.4	4.6
Antimony		0.35	υ	0.35	0.56
Arsenic		0.61	U	0.61	0.93
Barium		2.2	Х	0.070	0.46
		0.042	В	0.031	0.19
Beryllium		0.91	U	0.91	1.9
Boron		0.038	U	0.038	0.19
Cadmium		39.6	вх	13.1	46.3
Calcium		0.12	вх	0.054	0.19
Chromium		0.12	BX	0.093	0.93
Cobalt		0.20	UΧ	0.20	0.93
Copper		273	X	3.5	4.6
Iron		0.50	^	0.25	0.46
Lead		22.8	×	3.4	18.5
Magnesium			x	0.093	0.93
Manganese		6.8	Û	0.24	1.9
Molybdenum		0.24		0.11	3.7
Nickel		0.11	υx	38.0	278
Potassium		47.6	В		0.93
Selenium		0.80	U T	0.80	9.3
Silicon		176	× J	5.2	9.3 0.19
Silver		0.15	U	0.15	
Sodium		54.6	U	54.6	111
Vanadium		0.17	BX	0.087	1.9
Zinc		1.2	xc OJ	0.37	0.93

7471A Mercury (CVAA)

Analysis Method: Prep Method: 7471A 7471A Analysis Batch: Prep Batch: 280-131210 280-130819 Instrument ID:

Lab File ID:

MT_033 120803aa.txt

Dilution: Analysis Date: 1.0

08/03/2012 1917 08/03/2012 1155 Initial Weight/Volume: Final Weight/Volume:

0.58 g 50 mL

Prep Date: Analyte

Mercury

DryWt Corrected: Y

Result (mg/Kg) 0.0057 Qualifier U MDL 0.0057 RL 0.018

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-31717-1

SDG #: JP0404 SAF#: RC-075

Date SDG Closed: August 2, 2012 Data Deliverable: 7 Day / Summary

CLIENT ID J1PX15 J1PX16 J1PX17 J1PX18	<u>LAB ID</u> 280-31718-1 280-31718-2 280-31718-3 280-31718-4	ANALYSES REQUESTED 6010/7471 6010/7471 6010/7471 6010/7471	ANALYSES PERFORMED 6010B/7471A 6010B/7471A 6010B/7471A
J1PX18 J1PX19	280-31718-4 280-31718-5	6010/7471	6010B/7471A
J1PX20	280-31718-6 280-31718-7	6010/7471 6010/7471	6010B/7471A 6010B/7471A
J1PX21	200 0 11 10 1		

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The samples were received on 8/2/2012 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.7° C.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-130761 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium and Zinc are present in the method blank associated with batch 280-130761. Because the concentrations in the method blank are not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1PX15; therefore, control limits are not applicable.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J1PX15, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1PX15 exhibited RPD data outside the control limits for Molybdenum, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

A low level of Selenium was present in the instrument blank associated with batch 280-130761. The concentration in the instrument blank was present at a level greater than half the reporting limit but all of the samples were non-detect, corrective action is deemed unnecessary.

No other anomalies were encountered.

					4.	7	8/2/	12	@	CR			
	OTY 4 T37 C	NE CHIOTE	ODVICA	MPIF	ANALYS	IS F	EQUEST			75-313	Page 5 0	of <u>6</u>	
Washington Closure Hanford	CHAIN C	of CUSI	Telephon	e No.	CHICALIO	1 1	Motor Con ann	itor Pri	ce Code	RL	Data Tur	naround	
Collector	J Kessner		509-37			-+-	CESSNER, JH				2 1-1	Turnaround	
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot 100-D-50:8 Verific			×			I	SAF No. RC-075				_ ל		
Ice Chest No. RCC - 08 - 022	Field Logbook N EL-1607-14	lo.		COA R00D50200	00		Method of Shipn FedEx						
Shinned To TestAmerica Incorporated, Richtand TestAmerica Incorporated, Richtand TestAmerica Incorporated, Richtand	Offsite Property	No.	A 110	448			Bill of Lading/A	Jr Bill No.	See	o OSP	(
POSSIBLE SAMPLE HAZARDS/REMARKS	Pres	servation	Cool 4C	Cool 4C	None	None							
None		of Container	G/P	G/P	G/P	G/							
Special Handling and/or Storage	No. of	Container(s)	1	1	1	/					ļ		
Cool 4 Deg C	 	/olume	120mL	120mL	120mL	120m	L						
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	Nickel- Street 189,90	Isotopi Uraniu							
Notrix * San			74-00-00-00		#			3 25 13					
Sample No. Wattix	ipie Duis	Sample Time	The co		A STATE OF THE STA	anga &	经验证	100 .00x	X C L V				
J1PX15 - SOIL 73	المرابا	1320	1 ×	1-/	1								
J1PX16 SOIL 1	31/2	1325	×	1	1								
J1PX17 - SOIL]	31/12	1335	X	/	+								
J1PX18 - SOIL 1	31/12	1340	- X	1/	-	_							
INITAIN	131/14	1355	X	CDE	CIAL INSTRI	UCTIO	ONS				S. S	Matrix *	
Relinquished By/Removed From Date/Time Rose Relinquished By/Removed From Curf Date/Time 1550 Record Relinquished By/Removed From Curf Date/Time 1550 Record Relinquished By/Removed From With Date/Time 1060#1 Record A. Freder A. Anne 8-1-12 1200	Sign/Print Names sived By/Stored In WS/A eived By/Stored In Free C eived By/Stored In eived By/Stored In eived By/Stored In	welt anknowel oco#1 Frein Fed Ex	Date/Time 7/3./ Date/Time 7-3/-/2./ Date/Time Date/Time	(1) (2) (2) (3550) (Me	ICP Metals - 601	OTR (C	Rose-out List) (Alur um, Cobalt, Copper, s, Silicon, Silver, Soc	Iron Lead N	REVIEW BY	cury - 7471 - (, cocinon,	S=SoH SE=Sediment SO=SoHolde W = Water O=Oil A=Air DS=Daun Selt DU=Daun Liep T=Tissue WI=Wipe L=Lepid V=Vegetation X=Oster	
	ceived By/Stored In		Date/Time	:	JP()4()4	/	8/1/1	2_/			
Relinquished By/Removed From	ceived By/Stored In		Date/Time	Title	*						Date/Time		
LABORATORY Received By SECTION					Dispo	sed By					Date/Time		

	Hanford	C	HAIN OF CUST	ODY/S	AMPLE	ANALY	ISIS	REQUEST		RC-	075-313	Page 6	of , <u>o</u>
Washington Clos collector H. Weber	sure Hantord	Comp	Company Contact Telephone No. J Kessner 509-375-4688				KESSNER, JH	nator Pr	ice Code	8L	Data Turi	naround 7/31/12 Davs	
icat Designation	ls & Remaining Sites - Soil I		ling Location 0-D-50:8 Verification					SAF No. RC-075				7	
	-08-022	Fleld	Logbook No. -1607-14		COA R00D5020	00		Method of Shin FedEx					
	7/31/1-	3-3000000000	te Property No.	1104	48			Bill of Lading/	Air Bill No.	<u>S</u> ,	ee Os	PC	
POSSIBLE SAMPLE HA			Preservation	Cool 4C	Cool 4C	None	Non						
			Type of Container	G/P	G/P	G/P	G	ř					
Special Handling and/	or Storage		No. of Container(s)	1	1	1	1/1						
Cool 4 Deg C			Volume	120mL	120mL	120mL	120t	nL					
21	SAMPLE ANA	LYSIS		See item (1) in Special Instructions.	Chromium Hex - 7196	Nickel 6	Uran						
Sample No.	Matrix *	Sample Dat	e Sample Time	1236	Canal Co	1							
J1PX20	SOIL	7/31/1	1235	X	9	1	-		-	-	-	-	-
J1PX21	SOIL	7)3/11	1350	X	1	-	-		-	-	\vdash	-	
					+/	-	+-		-				
					/	+	+-		1				
		Clau/Da	int Names		SPE	CIAL INST	RUCTI	IONS					Matrix *
Malinariahad Bur Removed Fr	Date/Time 1.31/2/19 1.31/	Received By/S Received By/S Received By/S Received By/S Received By/S	Stored In Welf I MSHANGOWS, Stored In 1060#1 I I er A. Frein Stored In Fed Ex	Date/Time	74/0 7 (1) Cac Nic	ICP Metals - 6 Imium, Calciun kel, Potassium, ercury}	6010TR (6 n, Chrom , Seleniur	Close-out List) (Aluium, Cobalt, Copper m, Silicon, Silver, So	Iron Lead A	REVIEW	Cary - 7471 - (DOCHUIT	S=Soil SE=Scdimont SO=Soldimont SO=Soldimont Si=Shadge W = Water O=Oil A=Air DS=D rown Selfs DL=Drawn Liqu T="Tissue W1="Wipe L=Liquid. V="Vegetantion" X=Others*:"
Relinquished By/Removed F	rom Date/Time	Received By/		Date/Time		JP	040	04		8/1/	12		
Relinquished By/Removed F	rom Date/Time	Received By	/Stored In	Date/Time		, 1						Date/Time	_i
SECTION	eived By				Title	D i	sposed By					Date/Time	
FINAL SAMPLE Dis	posal Method					Di	shroon D	,					

Appendix 5

Data Validation Supporting Documentation

<u>V</u> ALIDATION LEVEL:	·A	В	(c)	D	Е
PROJECT:	100-D-50	: °	DATA PACKAG	E: JPOYOU	f
VALIDATOR:	ELR	LAB: TAL	**	DATE: 8	24/12
				0404	
		ANALYSES I	PERFORMED		
SW-846/ICP)	SW-846/GFAA	SW-846/Hg	SW-846		
SW-040/1CI)	5 0.10, 51721		Cyanide		
		•			
SAMPLES/MAT	RIX				
218112	JIPXIC	YAIT	17 31	IPXIE C	TIPX19
JIPX20	J (P2)				
J 11			-		•
Technical verifica	tion documentation	LETENESS AND o		VE	Yes No N
Technical verifica	tion documentation	LETENESS AND o		VE	\sim
Comments: Instructions Instructions	JMENT PERFORI	mance and cal	LIBRATIONS (Lo	evels D and E)	Yes No N
Comments: Initial calibrations	JMENT PERFORI	MANCE AND CA	LIBRATIONS (L	evels D and E)	Yes No
Comments: INSTRU Initial calibrations ICP interference of	JMENT PERFOR! s performed on all in a acceptable?	MANCE AND CA	LIBRATIONS (Le	evels D and E)	Yes No
2. INSTRU Initial calibrations ICP interference of	JMENT PERFORM s performed on all in a caceptable?	MANCE AND CAI	LIBRATIONS (Le	evels D and E)	Yes No
2. INSTRU Initial calibrations ICP interference of ICV and CCV chellow	JMENT PERFORI s performed on all in s acceptable? checks acceptable? ecks performed on a	MANCE AND CAlnstruments?	LIBRATIONS (Le	evels D and E)	Yes No
2. INSTRU Initial calibrations ICP interference of ICV and CCV che Standards traceab	JMENT PERFORI s performed on all in s acceptable? checks acceptable? ecks performed on a	MANCE AND CAll nstruments?	LIBRATIONS (Le	evels D and E)	Yes No
2. INSTRU Initial calibrations ICP interference of ICV and CCV che Standards traceab	JMENT PERFORI s performed on all in s acceptable? checks acceptable? ecks performed on a	MANCE AND CAInstruments?	LIBRATIONS (Le	evels D and E)	Yes No
2. INSTRU Initial calibrations ICP interference of ICV and CCV che ICV and CCV che Standards traceab Standards expired	JMENT PERFORITION S performed on all in the sacceptable? checks acceptable? ecks performed on a ecks acceptable? ole?	MANCE AND CAll nstruments?	LIBRATIONS (Le	evels D and E)	Yes No

BLANKS (Levels B, C, D, and E)	
CB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No
CB and CCB results acceptable? (Levels D. E)	Yes No NA
Laboratory blanks analyzed?	
aboratory blank results acceptable?	Yes No N/A
Field blanks analyzed? (Levels C. D. E.)	
Field blank results accentable? (Levels C. D. E)	Yes IND IN/A
Transcription/calculation errors? (Levels D, E)	Yes NO NA
Comments: ZINC-ZT-UJ	
\$	
FB - 1) detects	•
4. ACCURACY (Levels C, D, and E)	
MS/MSD samples analyzed?	Yes No N/A
MS/MSD results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes NO (NZA)
MS/MSD standards expired? (Levels D, E)	IES NO (N/A)
LCS/BSS samples analyzed?	Yes No N/A
LCS/BSS results acceptable?	Yes No MA
Standards traceable? (Levels D, E)	Yes No N/A
Standards avaired? (Levels D. F.)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes NO (N/A
Performance audit sample(s) analyzed?	Yes No N/A
The second state of the se	Yes No (N/A)
Comments: Silica - 2670 - J all (LC)	5
Comments: Silica - 2670 - J all (LCS) As- antim (Sizo) (Silica - 1170 -	504
1.5	
	NO PAS

5. PRECISION (Levels C, D, and E)	
Duplicate RPD values acceptable?	Yes No N/A
Duplicate results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	res No N/A
MS/MSD standards expired? (Levels D, E)	Yes Ne
Field duplicate RPD values acceptable?	Yes No N/A
Field split RPD values acceptable?	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No N/A)
Comments:	
-11/6	
8 cul	
6. ICP QUALITY CONTROL (Levels D and E)	
6. ICP QUALITY CONTROL (Levels D and E) ICP serial dilution samples analyzed?	Yes NO N/A
rap : 1 111 + - 0/D values acceptable?	
ICP post digestion spike required?	Yes No N/A
ICP post digestion spike values acceptable?	IES NO NA
Standards traceable?	Yes No N/A
Standards expired?	Yes No N/A
Transcription/calculation errors?	Yes NO N/A
Comments:	

7.	FURNACE AA QUALITY CONTROL (Levels D and E)	,	·
Dunlic	0 1	Yes	No	N/A
Duplic	icate injections performed as required?	Yes	No	N/A
Amala	tical spikes performed as required?	Yes	No	N/A
Anary	vtical spike recoveries acceptable?	Yes	No	N/A
Analy	ytical spike recoveries acceptable:	Yes	No	N/A
Standa	lards traceable?	Vec	No	N/A
Standa	lards expired?	103	No	NI/A
MSA	performed as required?	Y es	No	N/A
MSA	results acceptable?	Yes	No	N/A
Trans	scription/calculation errors?	Yes	No	N/A
Comn	ments:			$\stackrel{\smile}{-}$
<u> </u>				
_	MOLDING TIMES (all loyals)	6		
8.	HOLDING TIMES (all levels) ples properly preserved?		i Nc	N/A
Samp	ples properly preserved?	Yes	s No	N/A
	ple holding times acceptable?		<i>y</i>	
Com	nments:			
				
		. '		
-				

9.	RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results	s reported for all requested analyses?	Yes No N/A
Result	s reported for all requested analyses?s supported in the raw data? (Levels D, E)	Yes No(N/A)
Sample	es properly prepared? (Levels D, E)	Yes No NA
Detect	ion limits meet RDL?	(\.\.\.\Yes\)\No \N/A
Transc	ription/calculation errors? (Levels D, E)	Yes No N/A
Comm	ents:	
	·	

Appendix 6

Additional Documentation Requested by Client

Job Number: 280-31717-1

Sdg Number: JP0404

Method Blank - Batch: 280-130761

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID: Client Matrix:

MB 280-130761/1-A

Analysis Batch: Prep Batch:

280-131612 280-130761 Instrument ID: Lab File ID:

MT_026 26a080712.asc

Dilution: Analysis Date: Solid 08/07/2012 1530

Leach Batch: Units:

N/A mg/Kg

Initial Weight/Volume: Final Weight/Volume: 1 g 100 mL

Prep Date: Leach Date: 08/06/2012 0745 N/A

Analyte	Result	Qual	MDL	RL
The state of the s	T.6	U	1.6	5.0
Aluminum	0.38	U	0.38	0.60
Antimony	0.66	Ü	0.66	1.0
Arsenic	0.0900	В	0.076	0.50
Barium	0.033	ū	0.033	0.20
Beryllium	0.98	ŭ	0.98	2.0
Boron		Ŭ	0.041	0.20
Cadmium	0.041	U	14.1	50.0
Calcium	14.1	U	0.058	0.20
Chromium	0.058		0.10	1.0
Cobalt	0.10	U	0.22	1.0
Copper	0.22	U	3.8	5.0
Iron	3.8	U	0.27	0.50
Lead	0.27	U		20.0
Magnesium	3.7	U	3.7	1.0
Manganese	0.10	U	0.10	
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
	5.7	U	5.7	10.0
Silicon	0.16	U	0.16	0.20
Silver	59.0	U	59.0	120
Sodium	0.094	Ū	0.094	2.0
Vanadium	0.403	В	0.40	1.0
Zinc	0.403	-		

Job Number: 280-31717-1

Sdg Number: JP0404

Lab Control Sample - Batch: 280-130761

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID:

LCS 280-130761/2-A

Analysis Batch: Prep Batch:

Units:

280-131612 280-130761 Instrument ID: Lab File ID: MT_026 26a080712.asc

Client Matrix: Dilution: Analysis Date: Solid 1.0 08/07/2012 1532 Prep Batch: Leach Batch: 280-130 N/A mg/Kg

Initial Weight/Volume: Final Weight/Volume:

1 g 100 mL

Prep Date:

08/06/2012 0745

Leach Date:

N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	189.0	95	82 - 116	
Antimony	50.0	49.91	100	82 - 110	
Arsenic	100	94.92	95	85 - 110	
Barium	200	199.5	100	87 - 112	
Beryllium	5.00	4.96	99	84 - 114	
Boron	100	96.13	96	81 - 110	
Cadmium	10.0	9.77	98	87 - 110	
Calcium	5000	4915	98	82 - 114	
Chromium	20.0	19.42	97	84 - 114	
Cobalt	50.0	47.86	96	87 - 110	
Copper	25.0	23.14	93	88 - 110	
Iron	100	99.24	99	87 - 120	
Lead	50.0	47.98	96	86 - 110	
Magnesium	5000	4678	94	90 - 110	
•	50.0	48.06	96	88 - 110	
Manganese	100	97.63	98	86 - 110	
Molybdenum Nickel	50.0	47.30	95	87 - 110	
Potassium	5000	4866	97	89 - 110	
	200	188.6	94	83 - 110	
Selenium	1000	261.3	26	10 - 70	
Silicon	5.00	4.89	98	87 - 114	
Silver	5000	5065	101	90 - 112	
Sodium	50.0	49.43	99	88 - 110	
Vanadium Zinc	50.0	46.91	94	76 - 114	

Job Number: 280-31717-1

Sdg Number: JP0404

Matrix Spike - Batch: 280-130761

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-31717-1

Analysis Batch:

280-131612

Instrument ID:

MT_026

Client Matrix:

Solid

Prep Batch:

Lab File ID: 280-130761

26a080712.asc

Dilution:

1.0

Leach Batch: Units:

N/A mg/Kg Initial Weight/Volume: Final Weight/Volume: 1.12 g 100 mL

Analysis Date: Prep Date:

08/07/2012 1542 08/06/2012 0745

Leach Date:

Analyte	Sample Res	sult/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	6230	g according to the street state of	180	8396	1200	50 - 200	4
Antimony	0.59		45.1	25.99	56	20 - 200	
Arsenic	1.3		90.2	79.04	86	76 - 111	
Barium	62.7		180	232.4	94	52 - 159	
Beryllium	0.030	U	4.51	4.06	90	72 - 105	
Boron	1.2	В	90.2	75.80	83	75 - 107	
Cadmium	0.13	В	9.02	8.10	88	40 - 130	
Calcium	7820		4510	13190	119	43 - 165	
	7.3		18.0	24.80	97	70 - 200	
Chromium	8.5		45.1	46.44	84	72 - 106	
Cobalt	18.5		22.5	36.93	82	37 - 187	
Copper	22700		90.2	23450	874	70 - 200	4
Iron	9.6		45.1	45.82	80	70 - 200	
Lead	4320		4510	8590	95	64 - 145	
Magnesium	306		45.1	365.9	132	40 - 200	4
Manganese	0.40	В	90.2	76.33	84	75 - 103	
Molybdenum	10.0	U	45.1	47.56	83	61 - 126	
Nickel	903		4510	5203	95	56 - 172	
Potassium	0,79	U	180	150.9	84	76 - 104	
Selenium	506	U	902	603.9	11	20 - 200	N
Silicon		Ü	4.51	4.09	91	75 - 141	
Silver	0.15	U	4510	4713	97	78 - 111	
Sodium	345		45.1	105.0	99	50 - 169	
Vanadium	60.3			82.76	86	70 - 200	
Zinc	44.0		45.1	02.70	•		

Job Number: 280-31717-1

Sdg Number: JP0404

Duplicate - Batch: 280-130761

Client: Washington Closure Hanford

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-31717-1 Solid Analysis Batch: Prep Batch:

Units:

280-131612 280-130761

mg/Kg

Instrument ID: Lab File ID: MT_026

Client Matrix: Dilution:

1.0

Leach Batch: N/A

Initial Weight/Volume: Final Weight/Volume:

26a080712.asc 1.17 g 100 mL

Analysis Date: Prep Date: 08/07/2012 1539 08/06/2012 0745

Leach Date:

N/A

Analyte	Sample Re	sult/Qual	Result	RPD	Limit	Qual
Aluminum	6230	particular and a superior of the con-	6641	6	40	
Antimony	0.59		0.33	NC	40	U
Arsenic	1.3		1.25	7	30	
Barium	62.7		73.04	15	30	
	0.030	U	0.0509	NC	30	В
Beryllium	1.2	В	1.24	0.7	30	В
Boron	0.13	В	0.139	3	30	В
Cadmium	7820	_	7838	0.2	30	
Calcium	7.3		8.97	20	40	
Chromium	8.5		8.21	3	30	
Cobalt	18.5		18.15	2	30	
Copper			22270	2	40	
Iron	22700		11.35	17	40	
Lead	9.6		4505	4	30	
Magnesium	4320		321.9	5	40	
Manganese	306	_		31	30	вм
Molybdenum	0.40	B	0.544	7	30	-
Nickel	10.0		10.75	7	40	
Potassium	903		971.7	=	30	U
Selenium	0.79	U	0.74	NC		Ÿ
Silicon	506		519.7	3	40	
Silver	0.15	U	0.14	NC	30	U
Sodium	345		328.6	5	30	
Vanadium	60.3		59.09	2	30	
Zinc	44.0		44.21	0.4	40	

Job Number: 280-31717-1

Sdg Number: JP0404

Method: 7471A Method Blank - Batch: 280-130819 Preparation: 7471A

Leach Batch:

Units:

Lab Sample ID: Client Matrix:

MB 280-130819/1-A

Analysis Batch: Prep Batch:

280-131210 280-130819

N/A

mg/Kg

Instrument ID: Lab File ID:

MT_033 120803aa.txt

Dilution: Analysis Date:

08/03/2012 1849

Solid

08/03/2012 1155 Prep Date:

Client: Washington Closure Hanford

Leach Date: N/A

Initial Weight/Volume: Final Weight/Volume:

0.6 g 50 mL

Analyte

Result

Qual

MDL

RL

Mercury

0.0055

U

0.0055

0.017

Lab Control Sample - Batch: 280-130819

Method: 7471A Preparation: 7471A

Lab Sample ID: Client Matrix:

LCS 280-130819/2-A

Analysis Batch: Prep Batch: Solid Leach Batch:

280-131210 280-130819

N/A

mg/Kg

Instrument ID: Lab File ID:

MT_033 120803aa.txt

1.0 Dilution: 08/03/2012 1852 Analysis Date:

Prep Date:

Mercury

08/03/2012 1155

N/A Leach Date:

Units:

Initial Weight/Volume: Final Weight/Volume:

0.6 g 50 mL

Analyte

Spike Amount 0.417

Result 0.418

% Rec.

100

Limit 87 - 111 Qual

Matrix Spike - Batch: 280-130819

Method: 7471A Preparation: 7471A

Final Weight/Volume:

Lab Sample ID: Client Matrix:

280-31717-6 Solid

Analysis Batch: Prep Batch:

280-131210

Instrument ID:

MT 033

50 mL

Dilution:

1.0

Leach Batch:

280-130819 N/A

mg/Kg

Lab File ID: Initial Weight/Volume: 120803aa.txt 0.67 g

Limit

Analysis Date: Prep Date:

08/03/2012 1915 08/03/2012 1155

Leach Date:

Sample Result/Qual

В

Spike Amount

Result

% Rec.

Qual

Analyte Mercury

0.0079

Units:

0.375

0.380

87 - 111 99

Job Number: 280-31717-1

Sdg Number: JP0404

Duplicate - Batch: 280-130819

Client: Washington Closure Hanford

Method: 7471A Preparation: 7471A

Lab Sample ID:

280-31717-6

Analysis Batch:

280-131210 280-130819 Instrument ID: Lab File ID:

MT_033 120803aa.txt

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch:

Units:

N/A mg/Kg Initial Weight/Volume: Final Weight/Volume:

0.68 g 50 mL

Analysis Date: Prep Date:

08/03/2012 1912 08/03/2012 1155

Analyte Mercury

Leach Date:

Sample Result		Result	RPD	Limit	Qual
0.0079	В	0.00725	9	20	B

Date:

27 August 2012

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Subsite 100-D-50:8

Subject: Radiochemistry - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PX15	7/31/12	Soil	С	See note 1
J1PX16	7/31/12	Soil	° C	See note 1
J1PX17	7/31/12	Soil	C	See note 1
J1PX18	7/31/12	Soil	C	See note 1
J1PX19	7/31/12	Soil	. C	See note 1
J1PX20	7/31/12	Soil	C	See note 1

^{1 -} Alpha spectroscopy and total strontium.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All laboratory blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of an LCS analysis, all uranium-235 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Laboratory Duplicates

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity

(concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

Detection Levels

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

 Due to the lack of an LCS analysis, all uranium-235 results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), Data Validation Services.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH statement of work are as follows:

- Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample.
 Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

RADIOCHEMISRTY DATA QUALIFICATION SUMMARY*

SDG: JP0404	REVIEWER: ELR	Project: 100-D-50:8	PAGE_1_OF_1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
COMPOUND Uranium-235	J	All	No LCS analysis

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Sample Results Summary

TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

Report No.: 52621

8/20/12

SDG No: JP0404

Date: 08-Aug-12

Client Id Batch Work Order Parameter	Result +- Uncertainty (2s)	Qual U	Inits	Tracer Yield	MDL	CRDL	RPD
latch Work Order Parameter 215048 UISO_IE_PLATE_AEA							
J1PX15			pCi/g	84%	9.50E-02	1.00E+00	
MVXRE1AC U-234	1.58E-01 +- 1.0E-01	Uゴ	• -	84%		1.00E+00	
U-235	2.53E-02 +- 4.0E-02		pCi/g	84%	8.33E-02	1.00E+00	
U-238	1.48E-01 +- 9.7E-02		pong	0.77			
J1PX15 DUP	4 55 04		pCi/g	98%	6.12E-02	1.00E+00	81. 4
MVXRE1AH U-234	3.74E-01 +- 1.5E-01		pCi/g	98%	5.49E-02	1.00E+00	239.9
U-235	-2.29E-03 +- 2.3E-02		pCi/g pCi/g	98%		1.00E+00	84.2
U-238	3.62E-01 +- 1.4E-01		pong	0070			
J1PX16	4.05.04		pCi/g	82%	5.78E-02	1.00E+00	
MVXRF1AC U-234	2.38E-01 +- 1.2E-01	υJ	pCi/g	82%	4.60E-02	1.00E+00	
U-235	1.21E-02 +- 2.5E-02	0.3	pCl/g	82%	4.60E-02	1.00E+00	
U-238	2.77E-01 +- 1.3E-01		pcvg	Q2 70	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
J1PX17	0.05.00		pCi/g	88%	6.67E-02	1.00E+00	
MVXRG1AC U-234	1.50E-01 +- 9.6E-02		pCi/g pCi/g	88%	5.60E-02	1.00E+00	
U-235	-1.12E-03 +- 2.8E-02	UJ	pCi/g pCi/g	88%	7.20E-02	1.00E+00	
U-238	2.05E-01 +- 1.1E-01		pc//g	0070	1,202		
J1PX18			pCi/g	100%	4.21E-02	1.00E+00	
MVXRH1AC U-234	1.38E-01 +- 8.3E-02			100%	4.65E-02		
U-235	-9.25E-04 +- 2.3E-02	0.7	pCi/g	100%		1.00E+00	
U-238	9.20E-02 +- 6.7E-02		pCi/g	10070	-1,2,1		
J1PX19			nCVa	97%	4.72E-02	1.00E+00	
MVXRL1AC U-234	1.16E-01 +- 7.7E-02	υJ	pCl/g pCi/g	97%		1.00E+00	
U-235	1.03E-02 +- 2.4E-02	ر ن	•	97%		1.00E+00	
U-238	2.31E-01 +- 1.1E-01		pCl/g	81 70	0.002		
J1PX20			-C!/a	93%	6.00E-02	1.00E+00	
MVXRN1AC U-234	2.34E-01 +- 1.2E-01	6	pCi/g	93%		1.00E+00	
U-235	1.31E-02 +- 2.6E-02	U S		93%	7.02E-02		
U-238	2.06E-01 +- 1.1E-01		pCl/g	9370	7.02	, ,,,,,,	
2215047 SRTOT_SEP_PRECIP_GPC							
J1PX15	0.45.00	U	pCi/g	87%	1.65E-01	[
MVXRE1AD STRONTIUM	6.42E-02 +- 8.1E-02	U	porg	3, 10			
J1PX16	775.00	U	pCi/g	69%	1.62E-0	1	
MVXRF1AD STRONTIUM	5.47E-02 +- 7.7E-02	U	pong	2070			
J1PX16 DUP	- com co · 70° 00	U	pCi/g	71%	1.53E-0	1	3.
MVXRF1AF STRONTIUM	5.26E-02 +- 7.3E-02	U	porg		•		
J1PX17	0.545.00 4.45.04	U	pCl/g	46%	2.30E-0	1	
MVXRG1AD STRONTIUM	9.54E-02 +- 1.1E-01	0	L0				
J1PX18							

TestAmerica rptSTLRchSaSum mary2 V5.2.21 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Sample Results Summary

TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

Report No.: 52621

SDG No: JP0404

Date: 08-Aug-12

Client id	Parameter	Result +- Uncertainty(28)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
Batch Work Order 2215047 SRTOT_SEP_	PRECIP GPC							
J1PX18 MVXRH1AD S		-2.00E-02 +- 7.3E-02	U	pCi/g	67%	1.73E-01		
J1PX19 MVXRL1AD S	TRONTIUM	7.20E-02 +- 8.3E-02	U	pCi/g	63%	1.69E-01		
J1PX20 MVXRN1AD S	TRONTIUM	-4.73E-02 +- 6.8E-02	U	pCi/g	63%	1.70E-01		
2214134 7196_CR6								
J1PX15		1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
MVXRE1AA H		1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	3.50E-01	0.0
J1PX16 MVXRF1AA F	EXCHROM E	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1PX17 MVXRG1AA H		1.55E-04_+- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1PX18 MVXRH1AA H		1.55E-01 +- 0.0E+00	7	mg/kg	. N/A	1.55E-01	1.55E-01	
J1PX19 MVXRL1AA		1.55E-01 +- 0.0E+00	U	mg/kg	NA	1.55E-01	1.55E-01	
J1PX20 MVXRN1AA I	HEXCHROME	1.55E-01 +- 0.0E+00	υ	mg/kg	N/A	1.55E-01	1.65E-01	
No. of Results:	35							

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure 2620 Fermi Avenue Richland, WA 99354 TestAmerica Laboratories, inc.

August 8, 2012

Attention: Joan Kessner

SAF Number : RC-075

Date SDG Closed : August 1, 2012

Number of Samples : Six (6)
Sample Type : Soil
SDG Number : JP0404

Data Deliverable : 7-Day / Summary

CASE NARRATIVE

I. Introduction

On August 1, 2012, six soil samples were received at TestAmerica for radiochemical and chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1PX15	MVXRE	SOIL	8/01/12
J1PX16	MVXRF	SOIL	8/01/12
J1PX17	MVXRG	SOIL	8/01/12
J1PX18	MVXRH	SOIL	8/01/12
J1PX19	MVXRL	SOIL	8/01/12
J1PX20	MVXRN	SOIL	8/01/12

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. Nickel-63 was requested on the client chain of custody; the client contacted TestAmerica on August 2, 2012 and requested that the Nickel-63 request be canceled.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy

Uranium 234, 235 and 238 by method RL-ALP-015

Gas Proportional Counting

Strontium-90 by method RL-GPC-003

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

Quality Control IV.

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

Comments V.

Alpha Spectroscopy

Uranium 234, 235 and 238 by method RL-ALP-015:

The LCS, batch blank, samples and sample duplicate (J1PX15) results are within contractual requirements.

Gas Proportional Counting

Strontium-90 by method RL-GPC-003:

The LCS, batch blank, samples and sample duplicate (J1PX16) results are within contractual requirements.

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (J1PX15) and sample matrix spike (J1PX15) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar Project Manager

Washington Closure Hanford	CHA	IN OF CUST			ANALY	Proi	iect Coordinato	r	. OT		Data Turn	around
llector	Company Contact Telephone No. J Kessner 509-375-4688					KES	SNER, JH	Price Co	ode 8L		Data Turn 7/3 21-D	avs
H. Weber oject Designation One of the Proposition Sites - Soil Full Prot	Sampling 100-D-	Location 50:8 Verification				RC-						
100-D/DR Burial Grounds & Remaining Sites - Soil Full Protection	Field Log			COA R00D5020	000	Met	thod of Shipmen	it 31-/2-	Hand	a De	Iver	
hinard To		roperty No.	NA			Bil	l of Lading/Air	Bill No.	NA			_,,,_,,
TestAmerica Incorporated, Richland POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation	Cool 4C	Cool 4C	None	None						
None	-	Type of Container	G/P	G/P	G/P	G/P						
Special Handling and/or Storage W8/V12 7 PO46	4	No. of Container(s)	1	1	1	1						
COOL4 Deg C SDG # JRC405 I OT # J2HOH8452 J2HOLD	1457	Volume	120ml	120mL	120mL	120mL						
Special Handling and/or Storage W8N/2 PO406 Cool 4 Deg C SDG # JRO403 LOT # J2HOHO452 J2HOID CEPOH: 8/8/12 SAMPLE ANALYSI	J2H010	457	7	in Chromium Hex - 7196	Nickel-63; Stroutium- 89,90 — Total Sr	Isotopic Uranium						
SI WAY		Sample Time	1							山崎洋	12	5, m 144,
Sample No. V	mple Date		- Yarane	×	·V	У	MVXRE					
JIPX15 MVXQ	112	1320	1	12	×	×	MYXRF					
SILXIE /MVADO	31/12	1325	11	×	K	Х	MUXRG					
SIPKII MUN QU	31/12	1340	1/	X	×	V	MUXRH					
J1PX18 MYX QL SOIL 7	31/12	1355	\forall	У	×	×	MURL					Notation #
CHAIN OF POSSESSION	31/12 Sign/Print	Names			ECIAL INSTI					n 11:-	Demo	Matrix *
Relinquished By/Removed From Date/Time Recording is the Control of	ocived By/Stor Frcier ceived By/Stor	MStankouch Jour 1000#1 D. Freier	Date/Time	/550 Ni			e-out List) (Akmin, Cobalt, Copper, Irc llicon, Silver, Sodium					SE-Sodiment SO-Solid SI=Stodge W = Water O-Oil A=Air DS=Drum Soli DL=Drum Liq T=Tissue WI=Wipc
Relinquished By/Removed From Date/ time Re	ceived By/Stor	eo m	Date/Time					DATE	1			L=Liquid V=Vegetation X=Other
Reimquisped By/Reimoved 170m	sceived By/Sto						18	11/12				
Relinquished By/Removed From Date/Time Re	eccived By/Sto	red In	Date/Time		JP0404	1				- Wasan - 100 -	Date/Time	Д
LABORATORY Received By				Title								

Washington Closure Hanford	СВ	AIN OF C	UST	DDY/S.	AMPL!	E ANALY	SIS R	EQUEST		RC-(075-313	Page 0 0	лу
Collector H. Weber		v Contact		Telephor			P	roiect Coordin ESSNER, JH	ator Pri	ice Code	8L	Data Turi	naround Days
Project Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot		ng Location 0-50:8 Verificati	on					AF No. C-075		<i>V</i>	*****		Jays
Ice Chest No.		ogbook No. 607-14			COA R00D502	2000		lethod of Ships FedEx A4		Ha	-nd	Delive	r
Shipped To TestAmerica Incorporated, Richland	Offsite	Property No.	NA					Bill of Lading/A	kir Bill No.	~ ~ //	4	1	
POSSIBLE SAMPLE HAZARDS/REMARKS					۸		37						
None	-	Preservation	(in	Cool 4C	Cool 4C	None	None						
W 9/1/12		Type of Contr	ainer	G/P	G/P	G/P	G/P						
Special Handling and/or Storage JP0404 JP0404		No. of Contain	ner(s)	1 1	1	1	1						
Special Handling and/or Storage W 9/1/12 Cool 4 Deg C SDG # JPO403 JPO404 LOT # J2H010452 J2H0K)457	Volume		120m)	120mL	120mL	120mI						
Report: 8/8/12 SAMPLE ANALYSIS				See item (i) in Special Instructions.	Chromiun Hex - 719		Isotopic Uraniun						
Sample No. W Matrix * Sar	nple Date	Sample	Time	到得 油	TOP S		- 14				37		特别 被
IIPX20 WAYOU SOIL 7/		1235		17: 4:415	X	X	X	MUXRA					
TAVACT	31/2		2 0 0	1/3/1						-			
J1PX21 SOIL		1.33	- 10	1 -1.	7								
				1	Si P								
				-	-								
	Sign/Prin	t Names		4	SP	ECIAL INSTR	UCTIO	NS					Matrix *
Relinquished By/Removed From LCH Date/Time 1530 Recording Sylemoved From LCH Date/Time 1530 Recording Inches Inche	eived By/Sto HZH eived By/Sto	red In WS American In WS American In The State In WS American In W	L So	ate/Time -31-12 tate/Time -3-12 ate/Time ate/Time ate/Time	10 (1 10 C) 1550 N 10) ICP Metals - 60 admium, Calcium, fickel, Potassium, S Mercury}	10TR (Člo Chromiu Selenium,	se-out List) (Alum	ron, Lead, Mium, Vanadiu	apnesium, Man	iganese, Moly	ybaenung	S=Soil SE=Sodiment SO=Solid SH=Shadge W = Waser O=Oil A=Air DS=Dram Solids DL=Dram Liquids T=Thasus Wi=Wipe L=Liquid V=Vogstation X=Other
LABORATORY Received By SECTION					Title								
FINAL SAMPLE Disposal Method DISPOSITION						Disp	osed By					Date/Time	

Appendix 5

Data Validation Supporting Documentation

APPENDIX A RADIOCHEMICAL DATA VALIDATION CHECKLIST

				<u> </u>	T
VALIDATION	A	В	$\left(\begin{array}{c} c \end{array} \right)$	D	Е
LEVEL:	100-D-5019		DATA PACKAC	E: JPOL	104,
PROJECT: (VALIDATOR:	ELR	LAB: TA		DATE: 8	124/12
VALIBATION				170404	
		ANALYSES	PERFORMED Alpha Spectroscopy	Gamma Spectroscopy	
☐ Gross Alpha/Beta ☐ Total Uranium	S Strontium-90 Radium-22	☐ Tritium		/	
SAMPLES/MAT	TRIX				1226
JIPYIS	JIPXIC	JIPY	17 JIP	1 × 18 J	IPK/7
JIPXZO					
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	□ N/A
1. Completene	ess		•••		
Technical veri	fication forms p	resent?	••••••	Y	es No N/A
					<u></u>
Comments:					
					· · · · · · · · · · · · · · · · · · ·
		•			
			•		N/A
			••••••		
		nd9			Yes No N/A
Instruments/d	etectors cambran	3u /	***************************************		Yes No N/A
Initial calibrat	tion acceptable?	***************************************		***************************************	Yes No N/A
Standards NIS	ST traceable?				Yes No 19/2
Standarda Ev	nired?				Yes No N/
Standards Ex	pnca:	n			Yes No N/A
Calculation c	heck acceptable	<i>!</i>			Yes No N/
Comments:					
-				,	•

Calibration checked within required frequency? Yes Calibration check acceptable? Yes Calibration check standards traceable? Yes Calibration check standards expired? Yes Calculation check acceptable? Yes Comments: 4. Background Counts (Levels D, E) Background Counts checked within required frequency? Yes Calculation check acceptable? Yes Calculation check acceptable? Yes	No N/A
Calculation check standards expired?	: No N/A
4. Background Counts (Levels D, E) Background Counts checked within required frequency? Yes	s No N/A
Background Counts checked within required frequency?	
Background Counts checked within required frequency?	NIA
	s Mo N/A
Comments:	s No N/A

5 Blanks (Levels B, C, D, E)	□ N/A
Mathod blank analyzed within required frequ	iency?
Method blank results acceptable?	
Analytes detected in method blank?	
Field blank(s) analyzed?	Yes No NA
Field blank results acceptable?	Yes No UVA
Analytes detected in field blank(s)?	Yes No N/A
Transcription/Calculation Errors? (Levels D	, E)Yes No N/A
Comments:	No Fg
	Κ
	ike Samples (Levels C, D, E)
LCS /BSS analyzed within required frequen	ves No N/A
LCS/BSS recoveries acceptable?	
LCS/BSS traceable? (Levels D,E)	Yes No N/A
LCS/BSS expired? (Levels D,E)	Yes No N/A
LCS/BSS levels correct? (Levels D,E)	Yes No N/A
Transcription/Calculation Errors? (Levels I	Yes No (V/A)
Comments: VO U-23	5 LCJ - Jak
	•
	~[
7. Chemical Carrier Recovery (Levels C, I	D, E)
Chemical carrier added?	Yes No N/A
Chemical recovery acceptable?	Yes No N/A
Chemical carrier traceable? (Levels D, E)	Yes No N/A

Chemical carrier expired? (Levels D, E)	Yes No N/A
Franscription/Calculation errors? (Levels D, E)	Yes No N/A
Comments:	
oniments.	
·	
3. Tracer Recovery (Levels C, D, E)	□ N/A
Tracer added?	
Tracer recovery acceptable?	Yes No N/A
Tracer traceable? (Levels D, E)	Yes No NA
Tracer expired? (Levels D, E)	Yes No NA
Transcription/Calculation errors? (Levels D, E)	Yes No N/A
Comments:	
	_
9. Matrix Spikes (Levels C, D, E)	TAM/A
9. Matrix Spikes (Levels C, D, E)	N. N. N.
Matrix spike analyzed?	Yes No N/F
Spike recoveries acceptable?	Yes No N/F
Spike source traceable? (Levels D, E)	Yes No N/A
Spike source expired? Levels D, E)	Yes No N/A
Transcription/Calculation Errors? (Levels D, E)	Yes No N/A
Comments:	

10. Duplicates (Levels C, D, E)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•••••		🗆 N/A
Duplicates Analyzed at required frequency?				Xe No N/A
RPD Values Acceptable?	•••••			Yes No N/A
Transcription/Calculation Errors? (Levels D, E)	***********			Yes No N/
Comments:				
			•	
				□ N/A
11. Field QC Samples (Levels C, D E)				/ / /
Field duplicate sample(s) analyzed?				Yet No NA
Field duplicate RPD values acceptable?			•••••	Yes No (N/A)
Field split sample(s) analyzed?				Ye No N/A
Field split RPD values acceptable?		••••••	.,	Yes No (1/A)
Performance audit sample(s) analyzed?				Yes(No) N/A
Performance audit sample results acceptable?	,			Yes No WA
Comments:	No	Field	QC_	
			,	
12 Halding Times (All layels)				
12. Holding Times (All levels)		•		N. N.
Are sample holding times acceptable?		• • • • • • • • • • • • • • • • • • • •		(Yes)No N/A
Comments:				
		•		
	<u></u>			

13. Results and Detection Limits (All Levels)	🗆 N/A
13. Results and Detection Emilia (== = -)	
Results reported for all required sample analyses?	Yes No NA
Death and in row data? (Levels D. E.)	1 cs 110 A.A.
Results Acceptable? (Levels D, E)	Yes No W
Transcription/Calculation errors? (Levels D, E)	
Results Acceptable? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	·

Appendix 6 Additional Documentation Requested by Client

Date: 08-Aug-12

QC Results Summary TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No.: 52621

SDG No.: JP0404

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Blas	MDL
UISO_IE_PLATE_AE								
2215048 BLANK C	ıC,	2.03E-02 +- 3.1E-02	U	pCi/g	98%			5.04E-02
MVX1G1AA	U-234	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
	U-235		U	pCi/g	98%			4.44E-02
	U-238	-8.83E-04 +- 2.2E-02	U	pong	0070			
2215048 LCS,		2.89E+00 +- 6.2E-01		pCi/g	96%	91%	-0.1	4.22E-02
MVX1G1AC	U-234	3.19E+00 +- 6.7E-01		pCi/g	96%	96%	0.0	4.67E-02
	U-238	3.192+00 +-0.72-01		F 0				
SRTOT_SEP_PREC	IP_GPC							
2215047 BLANK (-6.16E-03 +- 5.2E-02	U	pCi/g	92%			1.23E-01
MVX1F1AA	STRONTIUM	5,102 00						4 005 04
2215047 LCS,	STRONTIUM	1.03E+00 +- 3.0E-01		pCi/g	91%	92%	-0.1	1.30E-01
MVX1F1AC	STRONTION		,					
7196_CR8 2214134 MATRIX	SPIKE JIPX15					0.50/	-0.1	1.55E-01
MVXRE1AE	HEXCHROME	8.60E+00 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1,552-01
2214134 LCS,					N/A	94%	-0.1	1,55E-01
MVXTA1AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	INIPA	5-1 /0		(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
2214134 BLANK	QC,		U	mg/kg	N/A			1.55E-01
MVXTA1AA	HEXCHROME	1.55E-01 +- 0.0E+00	J	шуму	1 777 1			
No. of Results:	10							

^{- (}Result/Expected)-1 as defined by ANSI N13.30. U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Date:

27 August 2012

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100-D/DR Burial Grounds & Remaining Sites - Soil Full Protocol - Waste

Subsite 100-D-50:8

Subject:

Wet Chemistry - Data Package No. JP0404-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0404 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1PX15	7/31/12	Soil	С	See note 1
J1PX16	7/31/12	Soil	С	See note 1
J1PX17	7/31/12	Soil	. C	See note 1
J1PX18	7/31/12	Soil	С	See note 1
J1PX19	7/31/12	Soil	C	See note 1
J1PX20	7/31/12	Soil	С	See note 1

^{1 -} Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less

than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package JP0404 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), Data Validation Services.

DOE/RL-96-22, Rev. 5, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, September 2009.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for decisionmaking purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0404	REVIEWER: ELR	Project: 100-D-50:8	PAGE_1_OF_1
COMMENTS: No qualifiers a	ssigned		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Date: 08-Aug-12

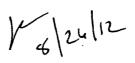
Sample Results Summary TestAmerica TARL

Ordered by Method, Batch No., Client Sample ID.

Report No.: 52621

SDG No: JP0404

Client Id Batch Work Order Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
2215047 SRTOT_SEP_PRECIP_GPC J1PX18 MVXRH1AD STRONTIUM	-2.00E-02 +- 7.3E-02	U	pCl/g	67%	1.73E-01		
J1PX19 MVXRL1AD STRONTIUM	7.20E-02 +- 8.3E-02	U	pCi/g	63%	1.69E-01		
J1PX20 MVXRN1AD STRONTIUM	-4.73E-02 +- 6.8E-02	U	pCl/g	63%	1.70E-01		
J1PX15 MVXRE1AA HEXCHROME MVXRE1AF HEXCHROME	1.55E-01 +- 0.0E+00 1.55E-01 +- 0.0E+00	U	mg/kg mg/kg	N/A N/A	1.55E-01 1.55E-01	1.55E-01 3.50E-01	0.0
J1PX16 MVXRF1AA HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1PX17 MVXRG1AA HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1PX18 MVXRH1AA HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	•
J1PX19 MVXRL1AA HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
J1PX20 MVXRN1AA HEXCHROME	1.55E-01 +- 0.0E+00	U,	mg/kg	N/A	1.55E-01	1.55E-01	
No. of Results: 35					•		



Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Certificate of Analysis

Washington Hanford Closure 2620 Fermi Avenue Richland, WA 99354 TestAmerica Laboratories, Inc.

August 8, 2012

Attention: Joan Kessner

SAF Number : RC-075

Date SDG Closed : August 1, 2012

Number of Samples : Six (6)
Sample Type : Soil
SDG Number : JP0404

Data Deliverable : 7-Day / Summary

CASE NARRATIVE

I. Introduction

On August 1, 2012, six soil samples were received at TestAmerica for radiochemical and chemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1PX15	MVXRE	SOIL	8/01/12
J1PX16	MVXRF	SOIL	8/01/12
J1PX17	MVXRG	SOIL	8/01/12
J1PX18	MVXRH	SOIL	8/01/12
J1PX19	MVXRL	SOIL	8/01/12
J1PX20	MVXRN	SOIL	8/01/12

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. Nickel-63 was requested on the client chain of custody; the client contacted TestAmerica on August 2, 2012 and requested that the Nickel-63 request be canceled.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy Uranium 234, 235 and 238 by method RL-ALP-015 **Gas Proportional Counting** Strontium-90 by method RL-GPC-003 Chemical Analysis Hexavalent Chromium by EPA method 7196A

Quality Control IV.

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy

Uranium 234, 235 and 238 by method RL-ALP-015:

The LCS, batch blank, samples and sample duplicate (J1PX15) results are within contractual requirements.

Gas Proportional Counting

Strontium-90 by method RL-GPC-003:

The LCS, batch blank, samples and sample duplicate (J1PX16) results are within contractual requirements.

Chemical Analysis

Hexavalent Chromium by EPA method 7196A

The LCS, batch blank, samples, sample duplicate (J1PX15) and sample matrix spike (J1PX15) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Rhonda Wagar Project Manager

Washington Closure Hanford	CHAIN OF CUST	ODY/S	AWIPLE	ANALL	Proi	ect Coordinator	Price Code	OT	Data Tur	naround
Hector	Company Contact J Kessner	Telepho 509-3	ne No. 75-4688			SNER, JH	Price Code	9L	21 I	ays
H. Weber	Sampling Location				SAF RC-	'No. 075		×	7	
oject Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	100-D-50:8 Verification		604		Met	hod of Shipment	-1	~ ~ d	Delver	•
Chest No. NA	Field Logbook No. EL-1607-14		COA R00D5020	000	E	of Lading/Air Bi				
nipped To TestAmerica Incorporated, Richland	Offsite Property No.	NA		т— T			II No.	/ /		
POSSIBLE SAMPLE HAZARDS/REMARKS		Cool 4C	Cool 4C	None	None					
None	Preservation		G/P	G/P	G/P					
	Type of Container	G/P	G/P					+ -		<u> </u>
Special Handling and/or Storage W 8/4/ 5 PO40	No. of Container(s)	1	1	1	1				_	
Special Handling and/or Storage W8/1/2 P040 Cool 4 Deg C SDG # JR0463 LOT # J2H046452 J2H010 Capat : 8/8/12 SAMPLE ANALYSI	U57 Volume	120mi	120mL	120mL	120mL					18
LOIFJANOISTON	MA AAM MINTEN (1580) MI II BM	I (V	in Chromium	Nickel-63;	Isotopic					
Prost: 818/12	J2H010457	poold	Hex - 7196	89,90 Total	Uranium					
SAMPLE ANALYSI	J2H01045/	7		Sr				1		
ယ		1							1	8.49
Sample No. Wall Matrix Sa	mple Date Sample Time	100	to all		STATE OF	AND DESCRIPTION OF THE PERSON		級	器 過齡	
Sample No. W Matrix Sa		N. N. C. S. C. S.	×	I.V	У	MVXRE				-
JIPX15 /MVXOF SOIL	1320	+I	1 ×	×	×	MUXRE				+
J1PX16 MVX & SOIL 7/	31/2 1325	+	- x	×	X	MUXRU				_
JIPX17 MVXQJ SOIL 7/	31/1 1335	11	X	×	V	MUXRH				
J1PX18 MXX QL SOIL 7	31/12 1340		V	×	×	MURL				Matrix *
J1PX19 MVX QM SOIL 7	Sign/Print Names		SP	ECIAL INSTI	RUCTION	S .				S=Soll
CHAIN OF POSSESSION Date/Time Rea	eived By/Stored In WCH	Date/Time	10112				, Antimony, Arser	nic, Barium, Be	ryllium, Bron,	SE=Sediment SO=Solid
Relinquished By/Removed From	1212 MStankouch	7/34	12 0	admium, Calcium	Chromium,	cont List) (Aluminum Cobalt, Capper, Iron, licon, Silver, Sodium,	Lead, Magnesum Vanadium, Zinc);	Mercury - 747	1 - (CV)	SI=Sludge W = Water
		7-31-1		Mercury)			~			O=Oil A=Air
MITTER METANGOLD PARTITION / DOOR / DO	1 4 D. Cennod In	Date/Time				REV	EWED			DS=Drum Sol DL=Drum Liq
Reimquished Byrkamoved Tions 8-1-12 1445	sibilities the	8.1-13	MAZ			[]	BY			T=Tissue WI=Wipc
Relinquished By/Removed From Date/Time Re	ceived By/Stored In	Date/Time				. D	ATE			L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Date/Time Re	ceived By/Stored In	Date/Time				8/	1/12			
	cceived By/Stored In	Date/Time		JP040'	4				Date/Time	
LABORATORY Received By			Title							
SECTION				Dis	sposed By				Date/Time	
FINAL SAMPLE Disposal Method										

YY C. J	СП	AIN OF CUST	ODY/S	AMPL	E ANALY	SIS F	REQUES	T		RC-0	75-313	Page 6 C	
Washington Closure Hanford	Compan J Kes	ov Contact	Telepho	ne No. 375-4688		. 1	KESSNER, JH	mator	Price	Code 8	L	Data Turi	
H. Weber roject Designation 100-D/DR Burial Grounds & Remaining Sites - Soil Full Prot	Sampling Location 100-D-50:8 Verification				1	SAF No. RC-075							
ce Chest No.	Field Logbook No. EL-1607-14		COA R00D50	COA R00D502000		Method of Sh _FedEx_ A	4 7-3				Delive	<u> </u>	
Shipped To TestAmerica Incorporated, Richland	Offsite	Property No. NA	T				Bill of Ladin	Z/Air Bil	1 No.	NA	} 		
POSSIBLE SAMPLE HAZARDS/REMARKS None		Preservation	Cool 4C	Cool 40		None							
		Type of Container	G/P	G/P	G/P	G/P		-					
Special Handling and/or Storage W 8/1/12 Cool 4 Deg C SDG # JRO403 JPO404 LOT # J2H010452 J2H010	1957	No. of Container(s)	12000	1 120ml		120m	L						
LOTH JOHO1045 Johns		Volume	See itest (4)			Lieuopi Urania		-	\dashv				
Report: 8/8/12 SAMPLE ANALYSIS			Special Instruction	Hex - 71	89,90 — Total Sr	Crana			1				
Sample No. W Matrix * Sar	mple Date	Sample Time	* La		A DELLA			7			(S) (S)		非相關組
J1PX20 AVXOP SOIL 7	31/2	1235	1	X		X	Myx	-	=				
J1PX21 SOIL		13509V	1/3/	14									
	•		II_{-}	5		-		+				4	
	Sign/Pri	nt Names	4	l Is	SPECIAL INST	RUCTIO	ONS						Matrix *
Reinquished By/Removed From WC 7.31/12 140 5 Recognished By/Removed From WC Date/Time 1530 Recognished By/Removed From WC 7/31/10 2 1 A Relinquished By/Removed From WC Date/Time 100 041 Recognished By/Removed From WC 12/12/1945	ejved By/St WZ/ eived By/St Freie	ored in MS+Ankouse ored in 1040#1 On Frein tored in TALL	Date/Time 7/3! Date/Time 7-3/-12 Date/Time Date/Time	1550	(1) ICP Metals - 6 Cadmium, Calcium Nickel, Potassium, (Mercuny)	010TR (C n, Chromi , Selemium	Aose-out List) (. um, Cobalt, C e n, Silicon, Sil e r,	Aluminum, per, Iron, I. Sodium, V	REVIE B LV	, Zine}; Merc	arium, Beryli nganese, Moly cury - 7471 - (ium, Boron, /bdenum, (CV)	SB-Sediment SO-Solid SI-Shadge W = Water O-Oil A-Air DS-Drum Solid DL=Drum Liqu T=Tissue W)=Wipe Li=Liquid V=Vogetation
	ceived By/S	itored In	Date/Time						8/1/	12/	^		X=Odbix
	ocived By/S	Stored In	Date/Time		JP040	14			_			Date/Time	1
LABORATORY Received By SECTION				Title	Die	sposed By	,		,		<u> </u>	Date/Time	
FINAL SAMPLE Disposal Method DISPOSITION	2000 - 500		*										• • • • • •

Appendix 5

Data Validation Supporting Documentation

		В	\circ	D	E
PROJECT:	00-D-S	9:5	DATA PACKAG		
VALIDATOR:	FLR	LAB:	H	DATE: 8/2	24/12
			SDG: JF	20404	
		ANALYSES I	PERFORMED		
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pН	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MATI	RIX				
JIPXIS	JIPX	(C. J	1PX17	TIPX18	1
JIPX19	JIPX				
31.7.7					
					Soil
Technical verificat		present?	CASE NARRATIV		Yes No N/A
Initial calibrations Initial calibrations ICV and CCV check ICV and CCV check Standards traceable Standards expired	performed on all in acceptable?cks performed on al cks acceptable?e?	struments?			Yes No N/A Yes No N/A Yes No N/A
Calculation check	acceptable?				Yes No N/A

BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No
ICB and CCB results acceptable? (Levels D, E)	Yes No WA
Laboratory blanks analyzed?	
Laboratory blank results acceptable?	Yes No N/A
Field blanks analyzed? (Levels C, D, E)	Ye (No) N/A
Field blank results acceptable? (Levels C, D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments:	vio PR
4. ACCURACY (Levels C, D, and E)	
Spike samples analyzed?	
Spike recoveries acceptable?	
Sike standards NIST traceable? (Levels D, E)	Yes No N/A
Spike standards expired? (Levels D, E)	
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	Yer No N/A
Standards traceable? (Levels D, E)	Yes No NA
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (N/A)
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	Yes No NA
Comments:	no PAS
· ·	

5.	PRECISION (Levels C, D, and E)		
	cate RPD values acceptable?		
Dupli	icate results acceptable?		
		Yes No N	
MS/N	MSD standards expired? (Levels D, E)	Yes No (N//	Į
		Yes No (N)	k
Field	split RPD values acceptable?	Yes No N	k
Trans	scription/calculation errors? (Levels D, E)	Yes No (N/)	¥
Com	ments:		_
		•	_
			_
			_
6.	HOLDING TIMES (all levels)		
Sami	nles properly preserved?		4
Same	ale holding times accentable?	Yes No N/	4
	ments:	\ \	_
Com			
		·	_
			_
			_
			_
			_

7.	RESULT QUANTITATION AND DETECTION LIMITS (an level	s)	
Results	reported for all requested analyses?	(Yes	No NA
Results	supported in the raw data? (Levels D, E)	Yes	No(N/A
Samples	s properly prepared? (Levels D, E)	Yes	No (N/A)
Detection	on limits meet RDL?	(Ye	No MA
Transcr	iption/calculation errors? (Levels D, E)	Yes	No N/
	nts:		
		•	
,			
		•	

Appendix 6

Additional Documentation Requested by Client

Date: 08-Aug-12

QC Results Summary TestAmerica TARL

Ordered by Method, Batch No, QC Type,.

Report No.: 52621

SDG No.: JP0404

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yleid	LCS Recovery	Blas	MDL.
UISO_IE_PLATE_AE	Α	,			•			
2215048 BLANK Q	C, U-234	2,03E-02 +- 3.1E-02	U	pCi/g	98%			5.04E-02
MVX1G1AA	U-235	-8.83E-04 +- 2.2E-02	Ü	pCi/g	98%			4.44E-02
•	U-238	-8.83E-04 +- 2.2E-02	U	pCi/g	98%			4.44E-02
2215048 LCS,	U-234	2.89E+00 +- 6.2E-01		pCi/g	96%	91%	-0.1	4.22E-02
.MVX1G1AC	U-238	3.19E+00 +- 6.7E-01		pCi/g	96%	96%	0.0	4.67E-02
SRTOT_SEP_PRECI 2215047 BLANK C MVX1F1AA	P_GPC QC, STRONTIUM	-6.16E-03 +- 5.2E-02	U	pCi/g	92%			1.23E-01
2215047 LCS, MVX1F1AC	STRONTIUM	1.03E+00 +- 3.0E-01	·••	pCi/g	91%	92%	-0.1	1.30E-01
7196_CR6 2214134 MATRIX MVXRE1AE	SPIKE, J1PX15 HEXCHROME	8.60E+00 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1.55E-01
2214134 LCS, MVXTA1AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	N/A	94%	-0.1	1.55E-01
2214134 BLANK (MVXTA1AA	DC, HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01
No. of Results:	10	•		•		-		